Appendix A

AIRSIDE FACILITY & PAVEMENT INSPECTION

A visual inspection of the existing airside facilities and paved areas at Ellington Airport was performed on October 1, 2009. This appendix summarizes the findings of the inspection, and describes the current condition and observed issues associated with each facility. Recommendations and cost estimates[1] are provided where appropriate. This information is provided in the following sections:

- Existing Conditions
- Visual Inspection of Facilities

A.1 Existing Conditions

Table A-1 summarizes the current conditions of the Airport's paved areas, including the runway, taxiways, and aircraft aprons.

TABLE A-1 – EXISTING CONDITIONS

Airside Facility	Condition	Issues	Short-Term Recommendation
Runway 1-19	Fair to Poor	Longitudinal/Transverse/Alligator Cracking; Localized Settlements	Repair Cracking
Taxiway	Poor	Severe Alligator Cracking; Pavement Deterioration; Patching	Full-depth Reconstruction
Main Apron	Fair to Poor	Longitudinal/Transverse/Alligator Cracking; Localized Settlements; Localized Deterioration	Mill & Overlay with Settlement Repair
Lighting & Navaids	Fair	No Segmented Circle for Wind Indicator	Paved Segmented Circle
Markings & Signage	Poor	Pavement Marking in Poor Condition; No Airfield Signage	Repaint Markings
Vehicle Parking Areas	Good	Minor Longitudinal/Transverse Cracking; Ponding Water	Seal Joints
Driveways	Fair	Unsealed Pavement Joint; Alligator Cracking; Localized Deterioration	Seal Joints & Repair Cracking

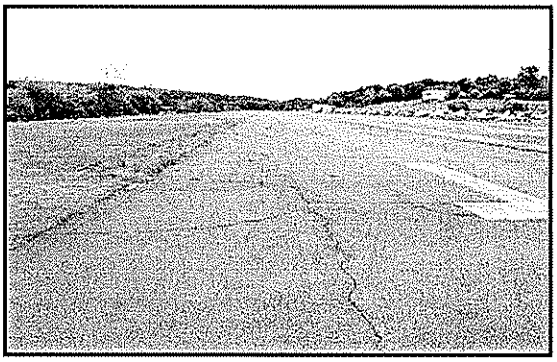
A.2 Visual Inspection of Facilities

Runway 1-19

The asphalt Runway 1-19 is 1,800 feet long and 50 feet wide and underwent rehabilitation in the early 1990's. The runway has a cross slope of approximately 1%. The runway pavement is in generally fair to poor condition and is characterized by unsealed longitudinal cracking along pavement joints (½-inch to 1-inch wide); unsealed transverse (thermal) cracking spaced approximately 15 feet to 25 feet along the length of the runway (½-inch to 4-inches wide), minor edge cracking, and alligator cracking. Alligator cracking is evident on the western side of the

1 Cost estimates are based on recent contractor bids of similar projects at other airports. FAA funded projects require competitive bids.

runway along approximately 75% of the length and on the eastern side of the runway in generally localized areas. Localized areas of settlement (up to 1-inch deep) are also evident along some cracks. Alligator cracking and settlement typically result from inadequate pavement strength and are generally caused by a loss of subgrade support due to poor drainage, asphalt stripping, and/or an inadequate pavement structure.



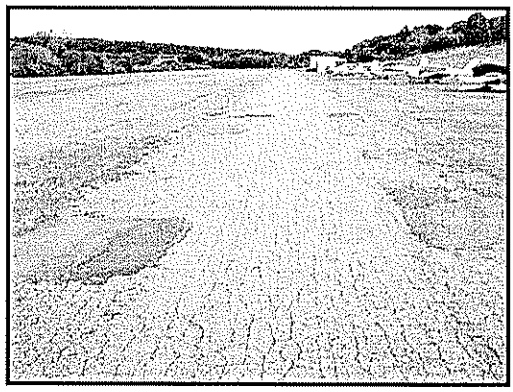
For the short-term, cleaning/sealing or repair of longitudinal and transverse cracks is recommended along with repair of areas of alligator cracking and settlement. Repair of severe cracks should consist of saw cutting and removing the existing pavement 6 to 12-inches on either side of the cracks; compacting or improving the existing subgrade, and patching the area with new bituminous pavement. Repair of alligator cracking and settlement should consist of removing the area of distressed pavement, improving the existing subgrade; and patching the area with new bituminous pavement. A thin bituminous overlay is recommended for consideration for all or part of the runway depending upon the resulting roughness of the patched and repaired pavement surface.

For the long-term, full-depth reconstruction of the pavement structure including improvement or replacement of the existing subgrade should be considered in conjunction with surface and subsurface drainage improvements, as necessary (see *Drainage* section for additional discussion). During the reconstruction the cross slope should be increase to 1.5%.

RUNWAY 1-19		
Recommended Improvements	**Estimated Cost**	**Timeframe**
Crack Cleaning/Sealing/Repair, Settlement Repair, & Overlay	$25,000	0-2 Yrs
Full-depth Reconstruction	$2,400,000	5-10 Yrs

Taxiway

The taxiway runs parallel to Runway 1-19, and is approximately 1,300 feet long and is approximately 20 feet wide. The taxiway pavement has experienced complete structural failure as evidenced by severe alligator cracking over 100% of the pavement area that has resulted in several large areas of pavement deterioration. Most areas of pavement deterioration have been repaired with bituminous patches.



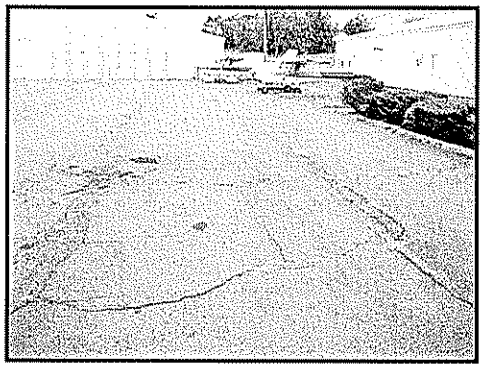
Due to the extensiveness of the pavement distresses, no improvements are recommended for the taxiway as a short-term fix prior to a full-depth reconstruction of the taxiway. Full-depth reconstruction of

the pavement structure including improvement or replacement of the existing subgrade should be considered in conjunction with surface and subsurface drainage improvements, as necessary (see *Drainage* section for additional discussion).

TAXIWAY		
Recommended Improvements	**Estimated Cost**	**Timeframe**
Full-depth Reconstruction	$1,000,000	0-2 Yrs

Main Apron

The main apron is comprised of several bituminous pavements of varying ages and conditions ranging from fair condition in some areas to generally poor condition. The pavement surface is characterized by unsealed longitudinal cracking along pavement joints (½-inch to more than 2-inches wide), unsealed transverse (thermal) cracking (½-inch to more than 2-inches wide), areas of localized and extensive alligator cracking, areas of localized settlement (up to 1-inch deep), areas of localized deterioration; and several bituminous patches to repair surface deterioration and utility cuts.



For the short-term, milling the existing surface and providing a bituminous overlay is recommended in conjunction with the repair of severe cracks and areas of alligator cracking and settlement. Repair of severe cracks should consist of saw cutting and removing the existing pavement 6 to 12-inches on either side of the cracks, compacting or improving the existing subgrade, and patching the area with new bituminous pavement. Repair of alligator cracking and settlement should consist of removing the area of distressed pavement, improving the existing subgrade, and patching the area with new bituminous pavement. All repairs should be completed subsequent to milling.

For the long-term, full-depth reconstruction of the pavement structure including improvement or replacement of the existing subgrade should be considered in conjunction with surface and subsurface drainage improvements, as necessary (see *Drainage* section for additional discussion).

Main Apron		
Recommended Improvements	**Estimated Cost**	**Timeframe**
Mill & Overlay with Crack/Settlement Repair	$52,000	0-2 Yrs
Full-depth Reconstruction	$751,000	8-12 Yrs

Airfield Lighting & Navigational Aids

The airfield lighting consists of 12-inch high, pilot controlled, Low Intensity Runway Lights (LIRL), 12" threshold lighting on each runway end, and a lighted windsock atop the office building. Although the lighting is currently to FAA standards and is in good condition, it is recommended during reconstruction of the runway the lighting system be upgraded, potentially utilizing LED lights. Furthermore, it is recommended that a paved segmented circle replace the wind sock[2].

AIRFIELD LIGHTING AND NAVIGATIONAL AIDS		
Recommended Improvements	**Estimated Cost**	**Timeframe**
Paved Segmented Circle and Windsock	$30,000	1-5 Yrs

Markings & Signage

The existing runway markings satisfy the requirements for a visual approach, and include white runway designation markings and white runway centerline markings. The runway markings are in poor condition and should be re-applied as part of future pavement marking rehabilitation.

The taxiway markings include a yellow taxiway centerline marking which only extends a short distance from either runway end and are in poor condition. There are runway hold position markings at both runway ends. It is recommended that taxiway centerline be applied to the full length of the taxiway.

The Airport does not contain adequate airfield signage. Providing airfield signage, such as lighted runway hold position signs at the intersections of the taxiways and runways, would improve the safety and operational efficiency of Ellington Airport. It is anticipated that the quality and capacity of the current electrical system to accommodate the new airfield lighting and signage is inadequate.

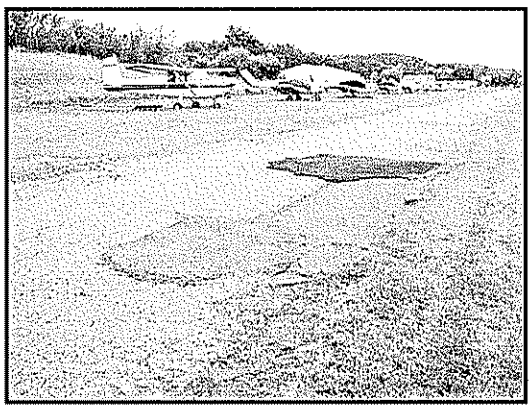
MARKINGS & SIGNAGE		
Recommended Improvements	**Estimated Cost**	**Timeframe**
Runway Markings	$135,000	0-2 Yrs
Taxiway Markings	$39,000	0-2 Yrs
Airfield Signage	$20,000	5-10 Yrs

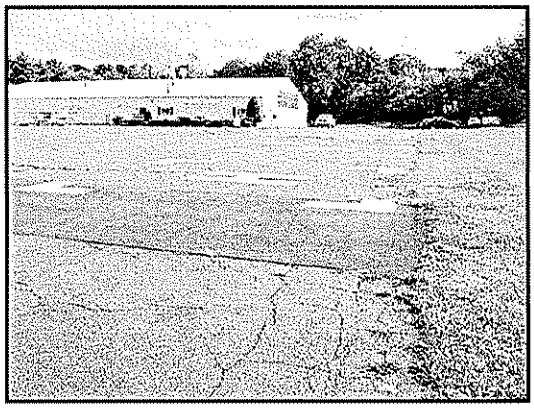
Aircraft Parking Areas

There is no paved aircraft parking area for fixed-wing aircraft at Ellington Airport. The turf area adjacent to the runway is used as a parking area for based and transient aircraft. There are approximately 22 tiedown locations across the turf area. There are five areas marked on the main

2 System includes a wind direction indicator, lighting, and a reflective, snow shedding paved segmented circle.

apron for helictoper parking. This area was included in the main apron inspection. Ideally, future airport improvements should include paved aircraft tiedown locations.





Vehicle Parking Areas

The pavement surfaces in the main parking area and parking for the auto mechanic are in generally fair condition and are characterized by minor, unsealed longitudinal cracking along pavement joints (less than ¼-inch to ½-inch wide) and minor, unsealed transverse cracking in some locations. Ponding water occurs in several locations in the main parking area as evidenced by accumulated gravel and sediment in shallow depressions in the pavement. A large area of standing water is also evident in the center of the parking area for the auto mechanic due to a low point in the pavement that is improperly graded with no apparent outlet.

The pavement surface in the helicopter hangar parking area is in generally poor condition and is characterized by extensive alligator cracking over approximately 75% of the parking area, several large areas of pavement deterioration and patching, and several areas of localized settlement with ponding water.

For the short-term, crack cleaning and sealing is recommended for the main parking area and parking area for the auto mechanic. Due to the extensiveness of the pavement distresses in the helicopter hangar parking area, no short-term improvements are recommended.

Full-depth reconstruction of the pavement structure in the helicopter hangar parking area should be considered in conjunction with surface and subsurface drainage improvements, as necessary (see *Drainage* section for additional discussion).

VEHICLE PARKING AREAS		
Recommended Improvements	**Estimated Cost**	**Timeframe**
Cracking Cleaning/Sealing	$1,500	0-2 Yrs

Drainage

The existing drainage system at the airport consists of open drainage for all major pavement areas with a sheet flow from east to west across the airport. Additionally, there is a pipe opening located adjacent to the helicopter parking area for a 12-inch RCP that outlets to Hydes Brook. The pipe is substantially clogged at both ends and disjointed with an exposed section of pipe penetrating the parking area.

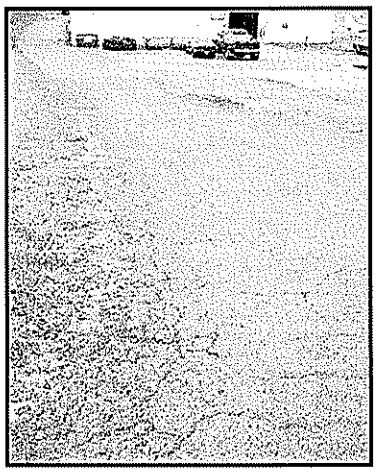
Surface drainage improvements should be completed in conjunction with other recommended pavement improvements to help address issues with ponding water and drainage-related pavement distresses such as alligator cracking and localized settlements. For the short-term, surface drainage improvements could include repairing depressions and settlements to eliminate low points on pavement surfaces; grading of soil adjacent to the runway, taxiway, main apron, and parking areas to promote sheet flow off and away from these pavement surfaces while minimizing potential ponding on the pavement; and replacing the existing 12" RCP located adjacent to the helicopter parking area. For the long-term, surface drainage improvements could include re-grading subgrade soils during full-depth pavement reconstruction to eliminate low points and promote sheet flow off of new pavement surfaces.

Recommendations for potential subsurface drainage improvements will be developed during the pavement rehabilitation design. Potential improvements include edge drains with associated outlets along the runway and taxiway to help drain water from the subgrade layer, and/or providing subgrade improvements in conjunction with full-depth pavement reconstruction.

DRAINAGE		
Recommended Improvements	**Estimated Cost**	**Timeframe**
12" RCP Replacement	$3,000	0-2 Yrs

Note: Costs for repair of pavement low points and re-grading of subgrade soils were included with the pavement rehabilitation and reconstruction costs presented in other sections.

Driveways



The main airport entrance driveway is in generally good condition due to a recent rehabilitation/overlay. There are only minor issues associated with the pavement including an unsealed transverse pavement joint at the interface between the overlay and adjacent pavement, and a localized depression associated with a spot repair. The helicopter/mechanic building driveway is in generally fair to poor condition with moderate edge cracking and alligator cracking covering approximately 50% of the pavement area. Minor erosion has occurred along the west side of the driveway resulting in pavement deterioration that has been addressed with localized patching in several areas. The section of the driveway located along the east side of the helicopter/mechanic building is in generally fair condition with

several localized areas of settlement and deterioration resulting from ponding water.

For the short-term, joint sealing at the main entrance driveway and repair of deteriorated pavement areas on the helicopter/mechanic building driveway are recommended. Minor grading of the soil adjacent to the west side of the helicopter/mechanic building driveway with placement of compacted stone along its edge is also recommended to support the pavement edge and minimize future erosion.

Reconstruction of the helicopter/mechanic building driveway is recommended to improve the strength of the pavement structure and to minimize future alligator (fatigue) cracking.

DRIVEWAYS		
Recommended Improvements	**Estimated Cost**	**Timeframe**
Joint Sealing/Pavement Repair	$75,000	0-2 Yrs
Helicopter/Mechanic Building Driveway Reconstruction	$200,000	0-2 Yrs